SPEECH SYNTHESIZER

μPD7751

NEC

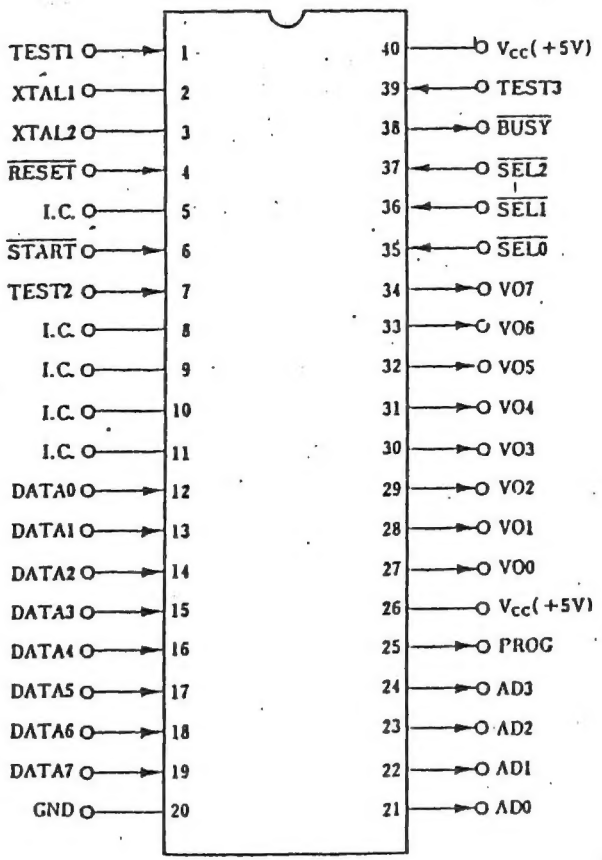
NEC Electronics (Europe) GmbH

μPD7751

FEATURES

- ADPCM DECODING CAPABILITY
- ZERO SIGNAL DURATING CROMPRESSION DECODING
- EASY VOICE PROCESSING
  - . HIGH-QUALITY VOICE
  - . LOW DEPENDENCE ON TALKER'S VOICE CHARACTER
  - . EASY ANALYSIS AND DATA GENERATION
  - . STABLE VOICE QUALITY
  - . BACKGROUND MUSIC MIXING CAPABILITY
- SAMPLING CLOCK:
  4 KHZ TO 6 KHZ
- VARIABLE BIT RATE:
  14 KBPS TO 20 KBPS
- 8 DIRECTLY SELECTED MESSAGES
- VARIOUS EXTERNAL ROM APPLICABLE
- N CHANNEL MOS
- 40-PIN PLASTIC DIP
- +5V SINGLE POWER SUPPLY
- SUPPLY CURRENT 65MA TYP.
- OPERATING TEMPERATURE RANGE 0~+70°C

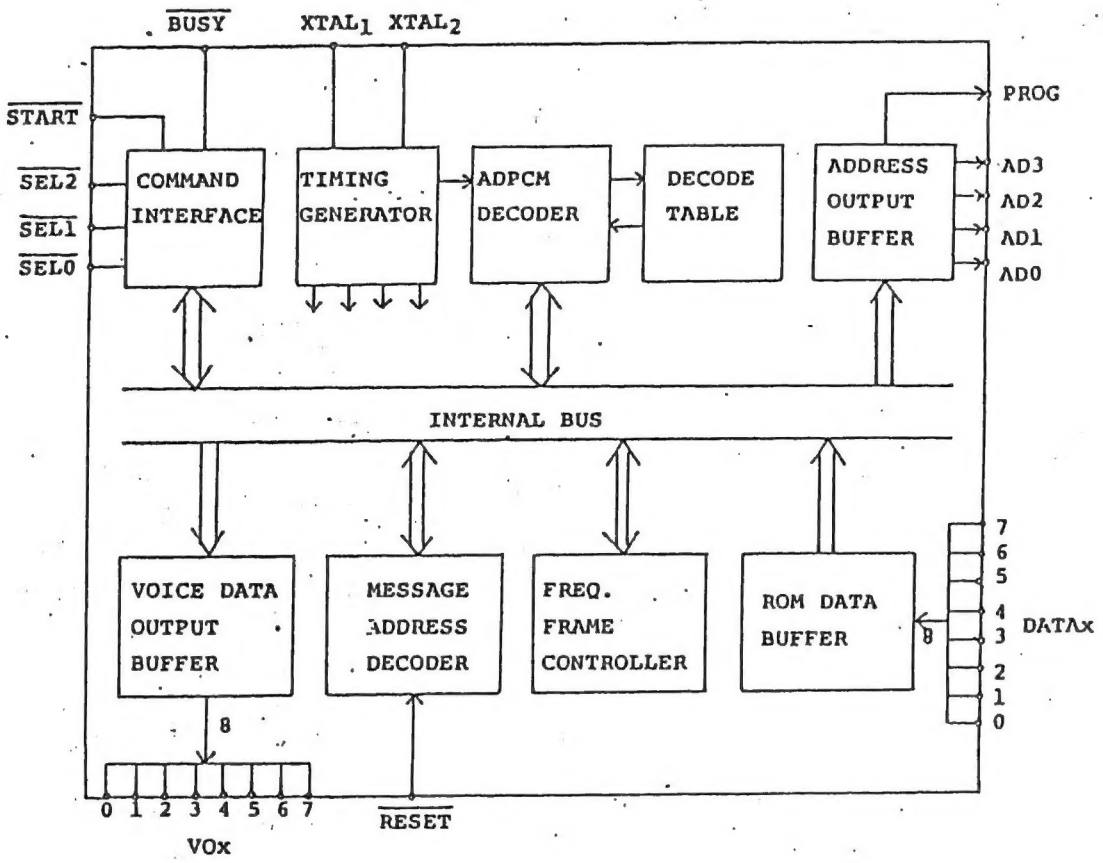
PIN CONFIGURATION (Top View)



NEC

μPD7751

BLOCK DIAGRAM



NEC Electronics (Europe) GmbH

ADPCM - Addaptive Differential PCM

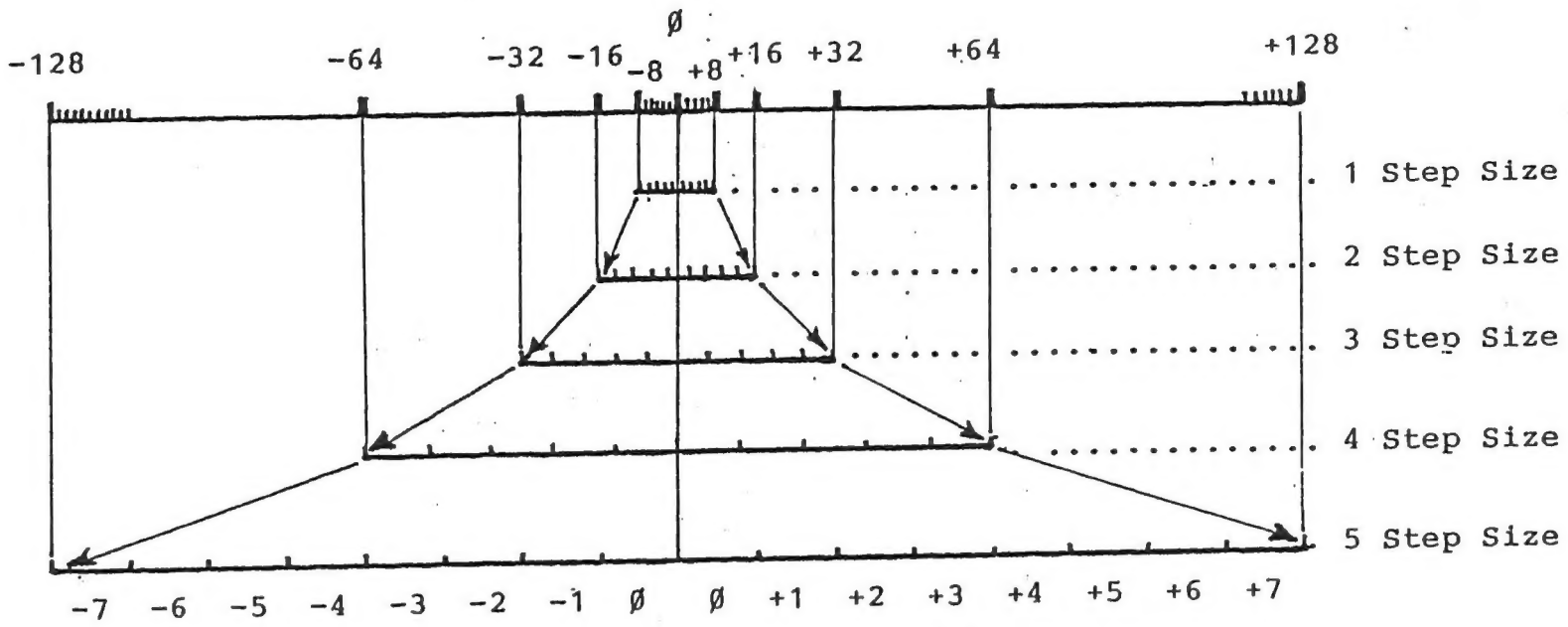
- Quantization Step varied according to the Input signal amplitude (μPD7751 has 5 binary coded steps)
- Each 8 Bit Differential PCM sample encoded with 4 Bits preceded by the Quantization Step Size
- The Quantization Step size is constant within one Frame (8 - 128 samples)
- Zero Signal duration (10-20%) is stored separately from the Speech Data
- Finally by digital integration a 8 Bit PCM output at the sampling rate will result

NEC

ADDAPTIVE DIFFERENTIAL PCM

QUANTIZATION STEP SIZE AND CORRESPONDING CODE

8 Bit Differential Code

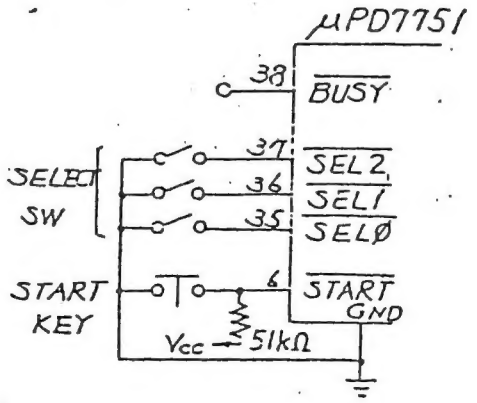


4 Bit Code Correspondance

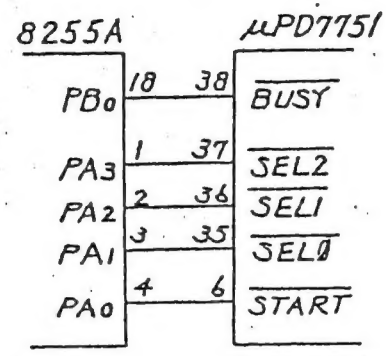
NEC

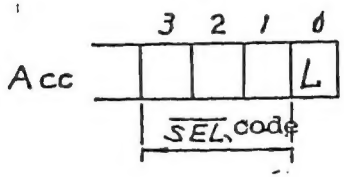
MESSAGE SELECTION

° DIRECTLY 8 MESSAGES SELECTION



° EASILY EXPANDABLE



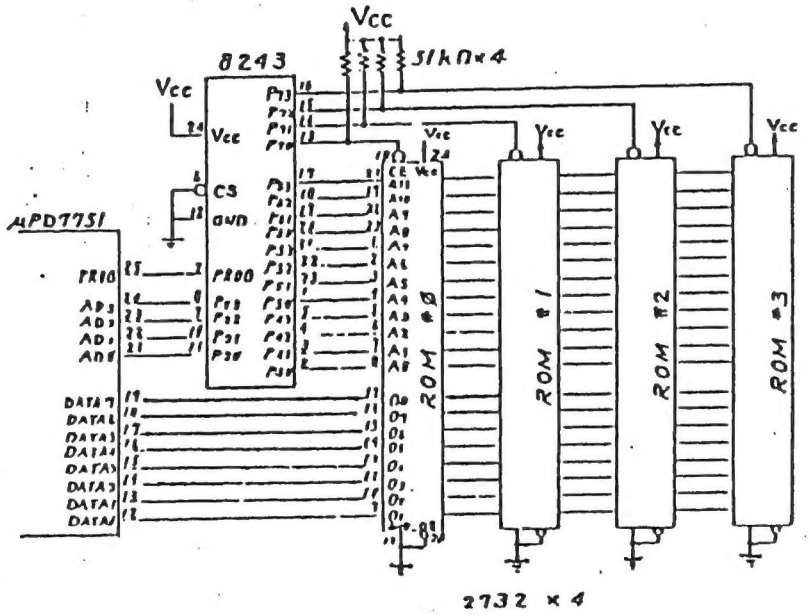


NEC

µPD7751

EXTERNAL ROM ADDRESSING & SELECTION

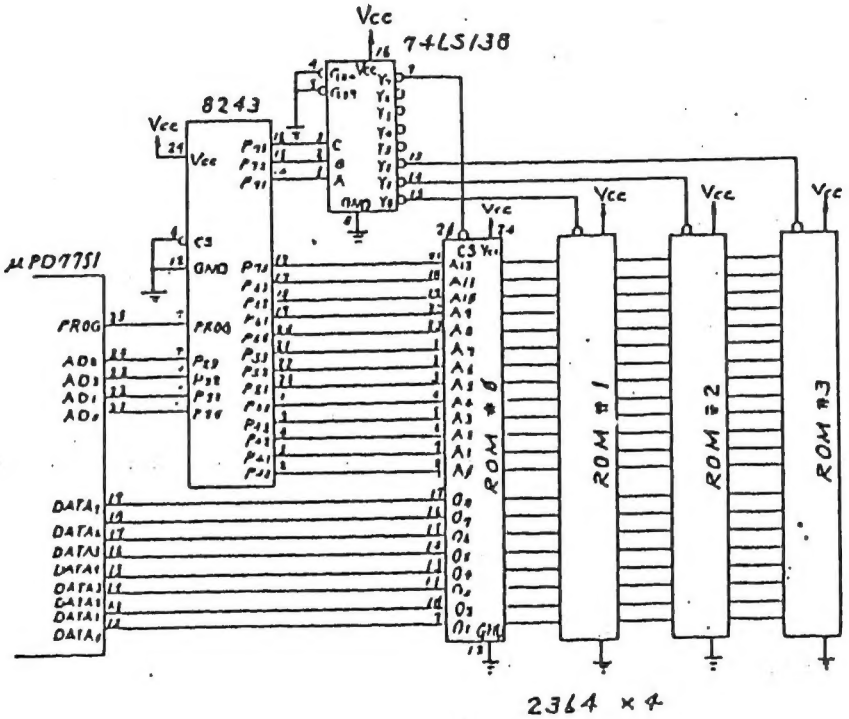
- 4 MEMORY CHIPS SELECTABLE WITHOUT EXTERNAL DECODING
- ANY MEMORY CHIP USABLE WITH ACCESS TIME LOWER THAN 4µs



Chip Select Mode ROM Interface

NEC

EXTERNAL ROM ADDRESSING & SELECTION

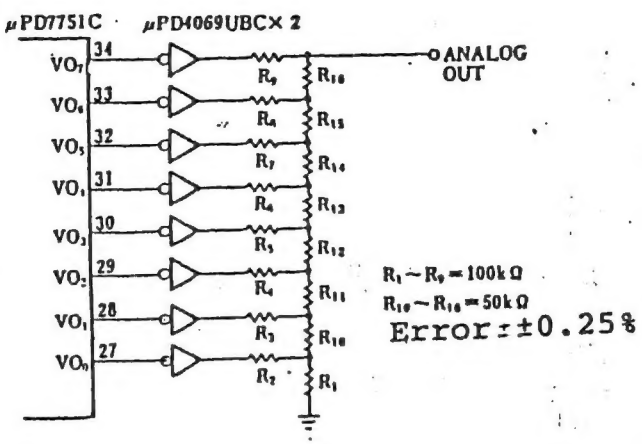


Binary Addressing Mode (256 kBit ROM)

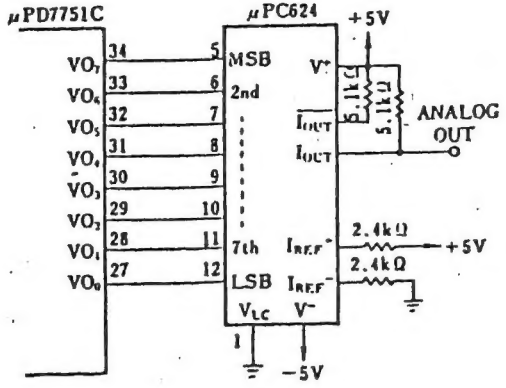
NEC

D/A CONVERSION

- 8 BIT MONOLITHIC OR RESISTOR LADDER DAC´S USABLE



D/A Converter Using
Resistor Ladder.

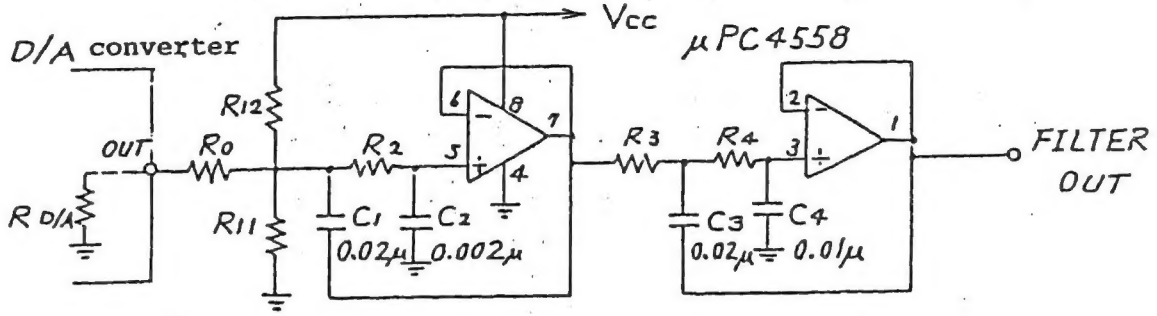


D/A Converter Using
μPC624.

NEC

LOW PASS FILTER

- 24DB/OCT BUTTEWORTH ACTIVE FILTER WITH DUAL OP-AMP

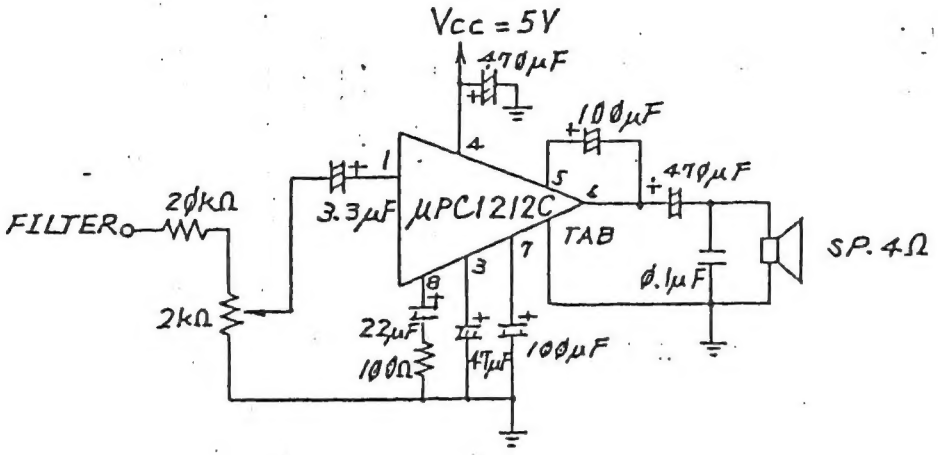


NEC

NEC Electronics (Europe) GmbH

POWER AMPLIFIER

- SINGLE SUPPLY, LOW VOLTAGE (+5V) POWER AMPLIFIER (0,75W)



NEC

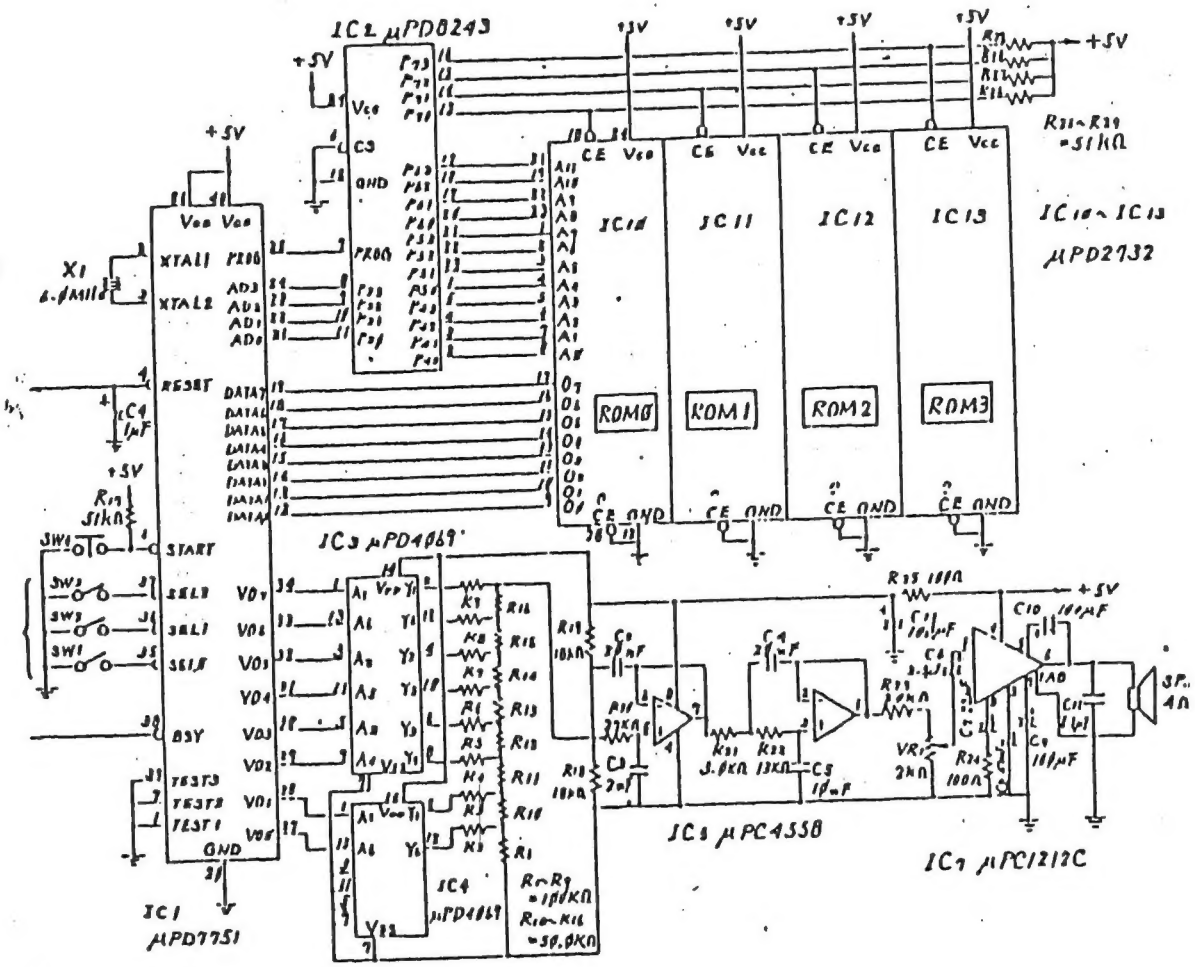
μPD7751 SPEECH SYNTHESIS SYSTEM DESIGN

(1) Ext. reset input

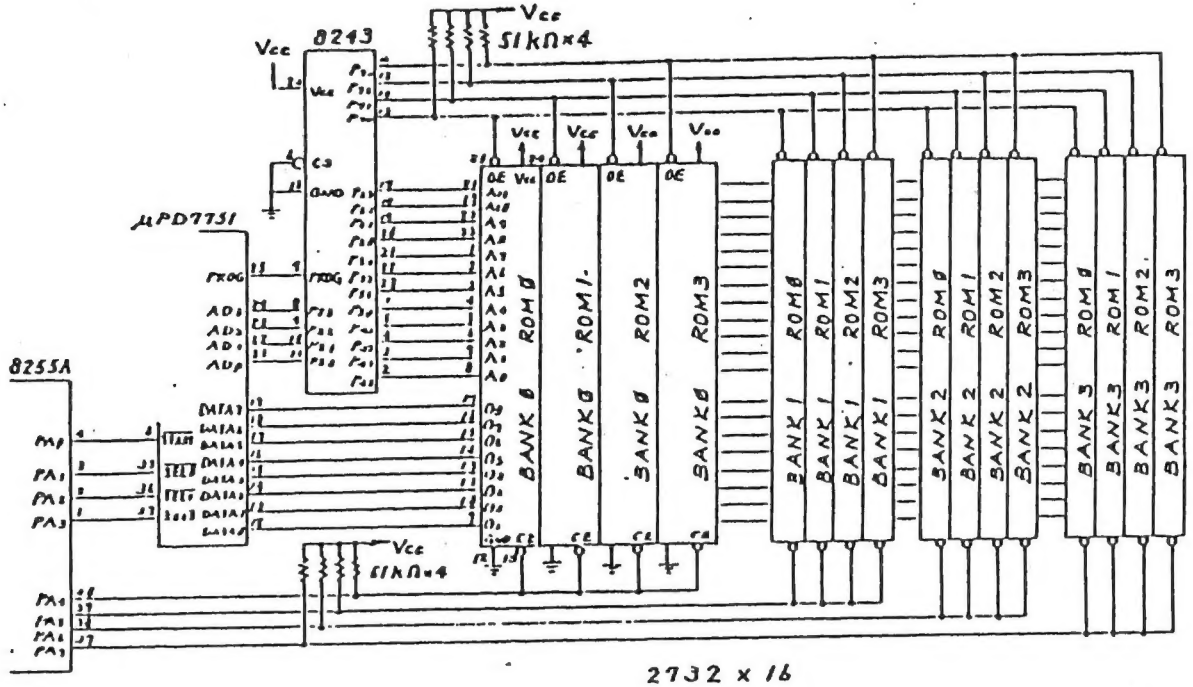
(2) START key

(3) Select sw

(4) Busy output



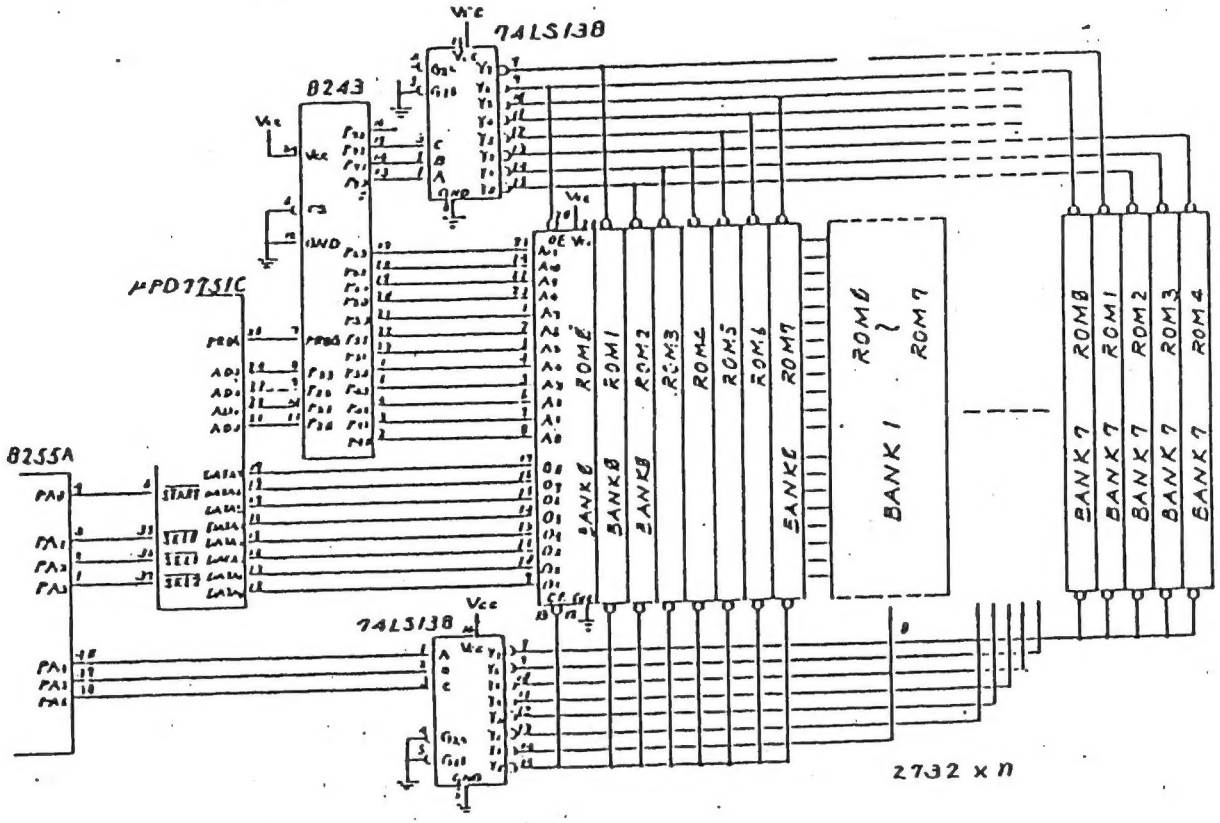
NEC



ROM Interface for 32 Message Selection

NEC

NEC Electronics (Europe) GmbH



Full Binary Decoding ROM Interface

NEC

NEC Electronics (Europe) GmbH